

Office Action Response
U.S.S.N. 10/074,219
Page No. 2

CLAIM LISTING:

1. (Currently Amended) A combination glass pH electrode including a sensing electrode, a reference electrode possessing a standard potential, an outer tube having a liquid junction, an inner tube centrally located within the outer tube and connected to the outer tube by a top seal and a bottom seal, a reference electrolyte compartment located between the inner and outer tubes and the top and bottom seals having an opening in the outer tube, and reference electrolyte within the reference electrolyte compartment, which needs no calibration for up to two years, the standard potential of which is stabilized by means of the following structural modification:

wherein the improvement comprises:

incorporation of a reference electrolyte compartment vent that minimizes moisture loss or pick-up from the surroundings yet under the influence of a partial vacuum created inside the reference electrolyte compartment, admits sufficient air to permit flow of added reference electrolyte through the liquid junction under the influence of gravity;

whereby the reference electrolyte ~~solution~~ is kept constant and the standard potential stability of the reference electrode is thereby stabilized;[.]

whereby the combination glass pH electrode needs no calibration for up to two years.

2. (Withdrawn) An electrode as in Claim 1, where the noble metal in the pH half-cell comprises platinum.

Office Action Response
U.S.S.N. 10/074,219
Page No. 3

3. (Withdrawn) An electrode as in Claim 1, where the noble metal in the reference half-cell comprises platinum.

4. (Withdrawn) An electrode as in Claim 1, where the electrolyte in the pH half-cell comprises phosphate or borate buffer to stabilize the pH and a mixture of iodide and triiodide to stabilize the oxidation-reduction potential.

5. (Withdrawn) An electrode as in Claim 4, where the electrolyte in the pH half-cell has a pH slightly different from 7.00 in order to generate a potential across the pH bulb that cancels the potential across the liquid junction when the electrode is in pH 7.00 buffer so that the overall potential of the electrode is nearly zero.

6. (Withdrawn) An electrode as in Claim 5, where the electrolyte composition in the pH half-cell comprises 4 M KI, 0.0069 M KI₃, 0.2 M H₃BO₃, adjusted to pH 7.05 with KOH.

7. (Withdrawn) An electrode as in Claim 1, where the electrolyte in the reference half-cell comprises phosphate or borate buffer and a mixture of iodide and triiodide to stabilize the oxidation-reduction potential.

8. (Withdrawn) An electrode as in Claim 7, where the electrolyte composition in the reference half-cell comprises 4 M KI, 0.0069 M KI₃, 0.2 M H₃BO₃, adjusted to pH 7.05 with KOH.

9. (Withdrawn) An electrode as in Claim 1, where the porous, inert material comprises porous ceramic.

Office Action Response
U.S.S.N. 10/074,219
Page No. 4

10. (Currently Amended) An electrode as in Claim 1, where the opening to the reference electrolyte compartment is covered with an elastomeric septum closure that is perforated to permit insertion of a tube which by reason of its small inside diameter compared to its length serves to minimize diffusion of ~~reduce the rate at which~~ moisture ~~can diffuse~~ into or out of the reference electrolyte compartment yet serves to admit ~~permit~~ sufficient ~~ingress~~ of air to allow electrolyte flow from the reference electrolyte compartment through the liquid junction under the influence of gravity.

11. (Currently Amended) An electrode as in Claim 10, further comprising a removable tube inserted into the perforation of the elastomeric septum closure, said tube having where the tube in the septum has an inner diameter of about 0.5 mm and a length of about 10 mm, said tube being temporarily removed in order to replenish the reference electrolyte.

12. (Currently Amended) An electrode as in Claim 1, where the opening to the reference electrolyte compartment is covered with an elastomeric septum closure with a slit, said slit by reason of the substantial but not absolute barrier it provides between the reference electrolyte compartment and outside environment serving to minimize ~~retard~~ diffusion of moisture into or out of the reference electrolyte compartment yet serving to admit ~~permit~~ sufficient ~~ingress~~ of air to allow electrolyte flow from the reference electrolyte compartment through the liquid junction under the influence of gravity and at the same time serving to allow convenient replenishment of reference electrolyte by any liquid delivery means with delivery tip shaped so as to be able to pry open the slit, said slit then closing upon removal of delivery tip by reason of the restorative tendency of the elastomeric septum closure ~~material~~.

Office Action Response
U.S.S.N. 10/074,219
Page No. 5

13. (Previously Presented) An electrode as in Claim 12, where the material of the septum closure comprises a silicone elastomer with a durometer of from about 30 to about 45.

14. (Withdrawn) An electrode as in Claim 1, where the storage sleeve seal between the sleeve and electrode may be effected in a manner not limited to the following: the sleeve is composed of an elastomeric material having a durometer between 75 and 80, and forms a seal with the electrode cap upon insertion of the electrode into the sleeve.

15. (Withdrawn) An electrode as in Claim 1, where the absorbent material in the storage sleeve comprises glass wool.

REMAINDER OF PAGE INTENTIONALLY BLANK